

National Park Service
U.S. Department of the Interior



Gulf Coast Inventory & Monitoring Network

A Device that Greatly Reduces Fouling on Autonomous Multiparameter Datasondes

Joe Meiman; Hydrologist USNPS

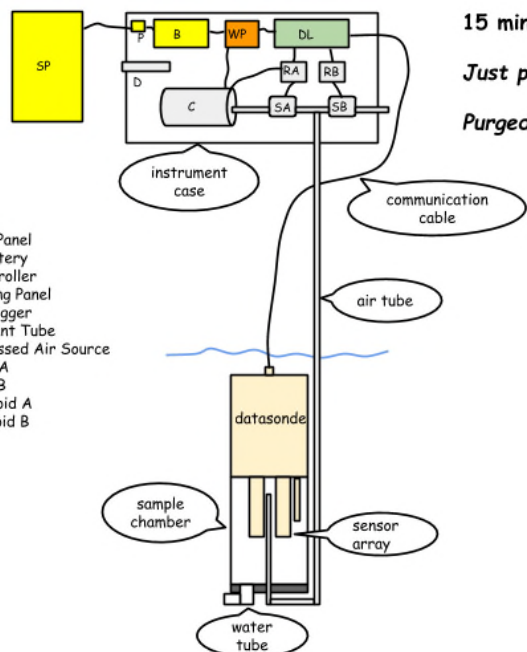
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Introduction and background

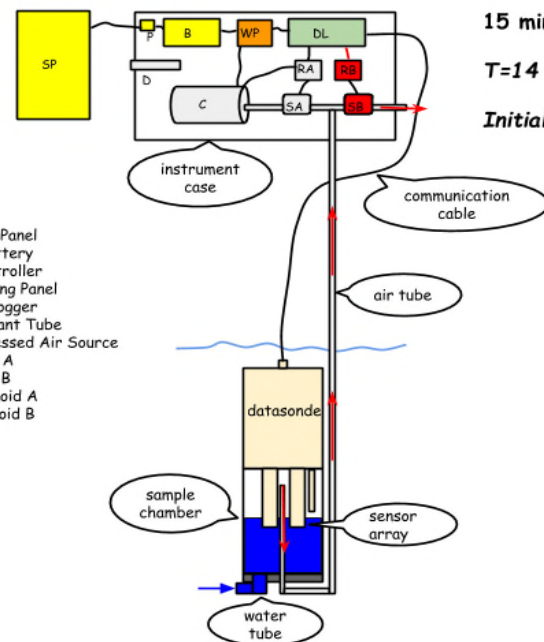
- A prototype was deployed in August 2012 for 49 days in very high biofouling waters.
- Patent process begins September 2012.
- Two units were deployed in April 2013 and have been in continuous operation (**417,000 operations**).
- The NPS secured a patent-pending in January 2016.
- The NPS and In-Situ Inc. sign Cooperative Research and Development Agreement in June 2016.
- NPS and In-Situ conducts Proof of Concept testing between August 2016 and June 2017.
- USTPO approves NPS patent January 2018.

Proof of Concept Test Plan

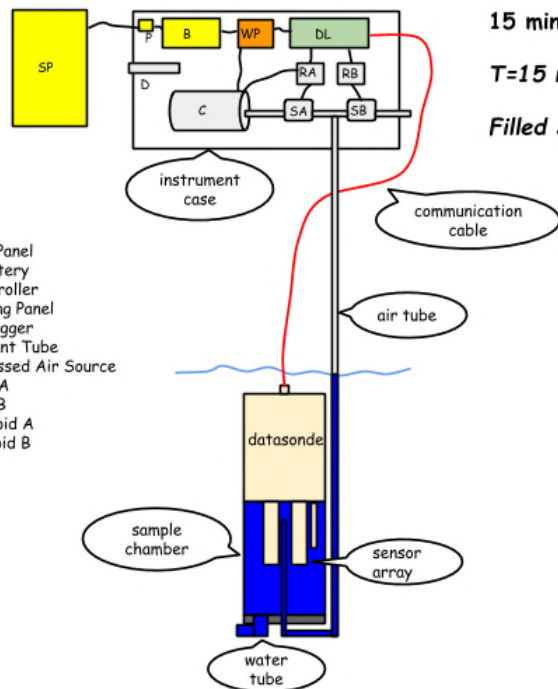
- Five sites with existing instruments in different fouling environments were chosen for proof of concept testing:
 - Lake Mead – lacustrine biofouling
 - Padre Island – warm water marine biofouling
 - Cumberland Island – marine sediment fouling
 - Obed River – riverine sediment fouling
 - Puget Sound – cold water marine biofouling
- 96,000 operations during POC testing.



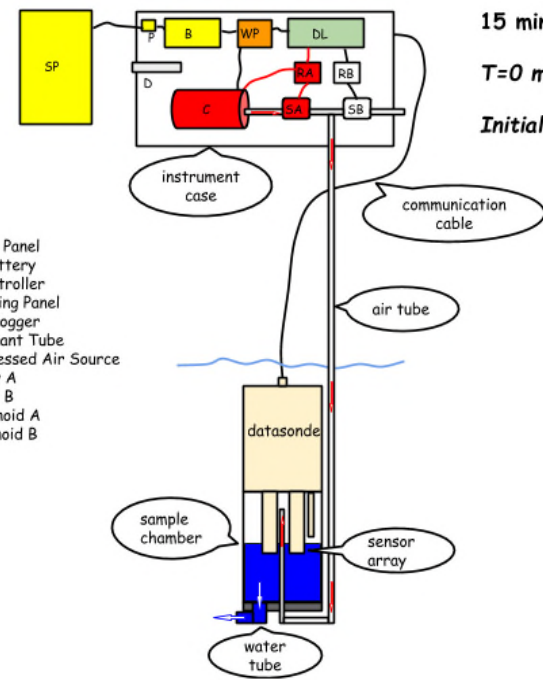
SP=Solar Panel
B=12v Battery
P=PV Controller
WP= Wiring Panel
DL=Datalogger
D=Desiccant Tube
C=Compressed Air Source
RA=Relay A
RB=Relay B
SA=Solenoid A
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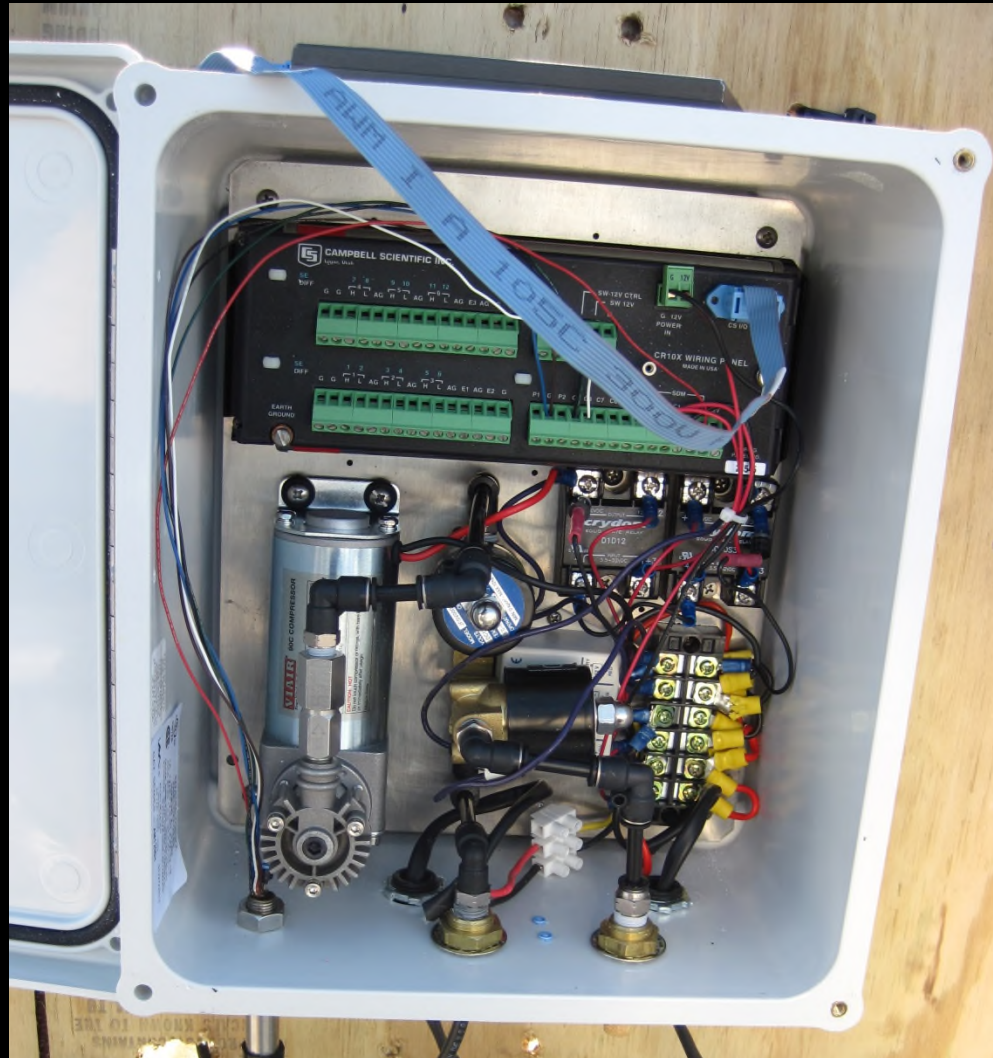


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Proof of Concept Deployment



Top-Side Control Unit, Lake Mead National Recreation.

Proof of Concept Deployment



In-Situ Aqua Troll 600 and device pre-deployment,
Lake Mead National Recreation Area

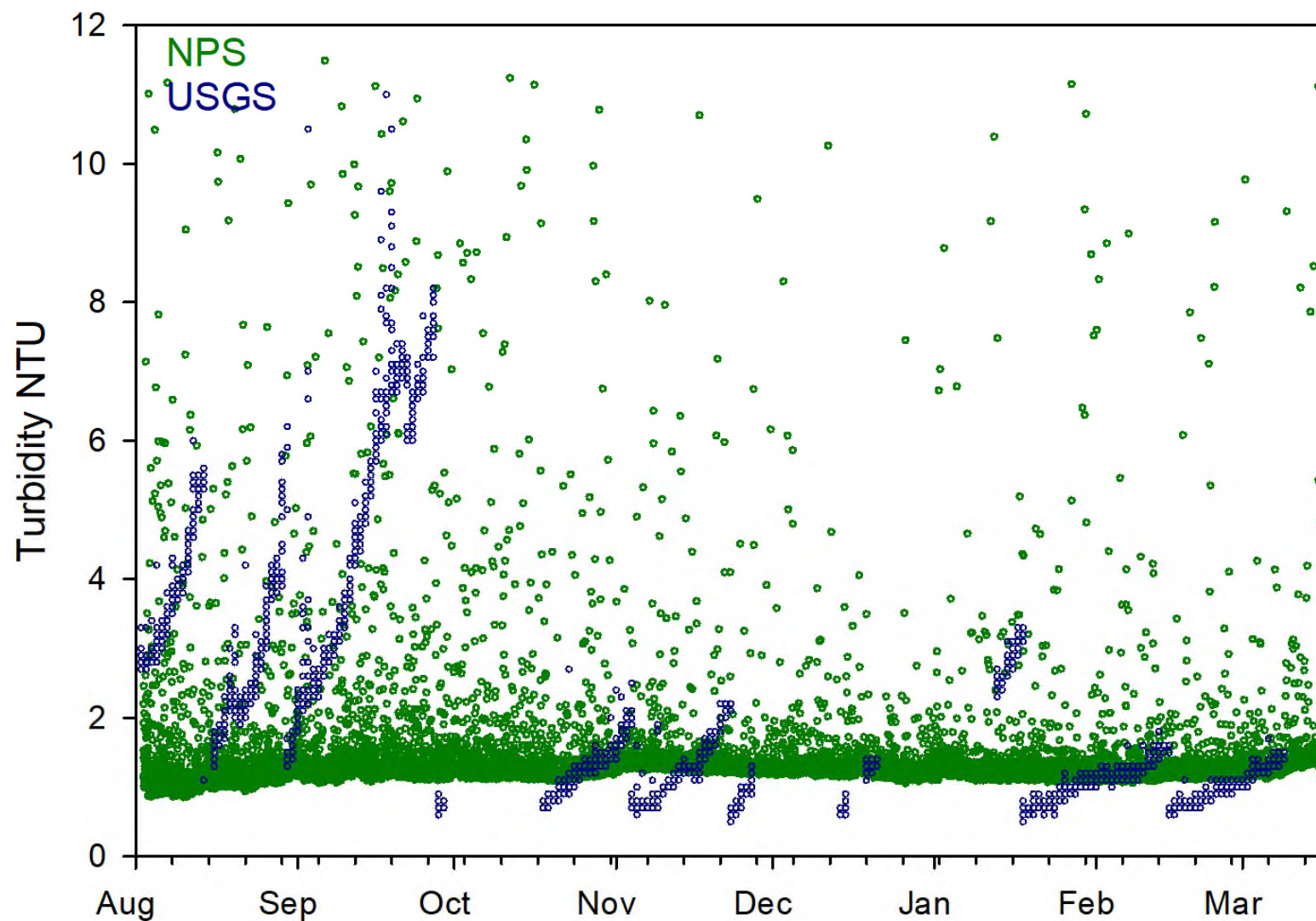
NO WIPERS USED DURING POC

Lake Mead National Recreational Area



August 1, 2016

Lake Mead National Recreation Area



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Padre Island National Seashore



August 18, 2016

Padre Island National Seashore



106 days later

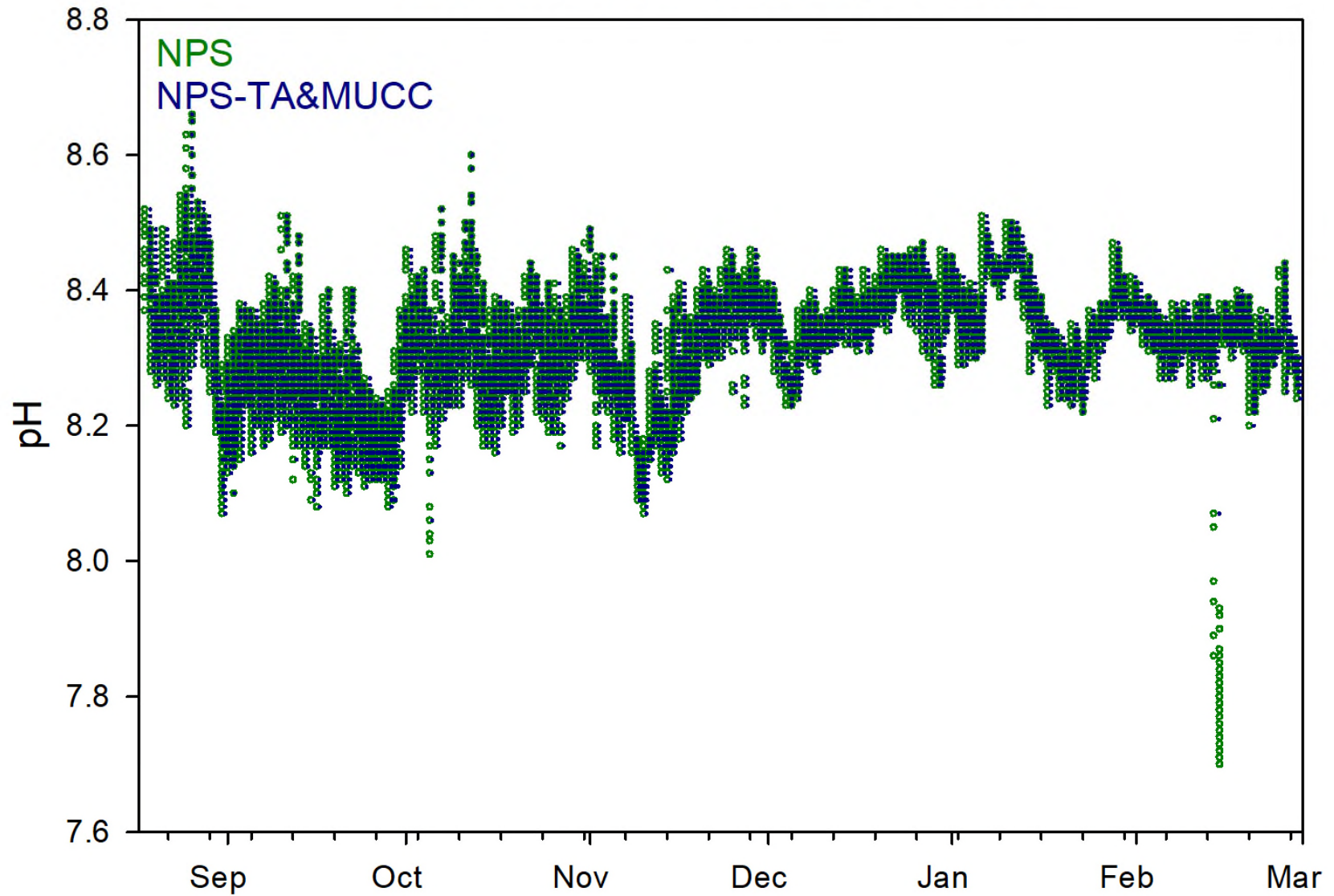
December 2, 2016

Padre Island National Seashore



December 2, 2016

Padre Island National Seashore



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Obed National Wild and Scenic River



August 31, 2016

Obed National Wild and Scenic River



August 31, 2016

Obed National Wild and Scenic River



August 31, 2016

Obed National Wild and Scenic River

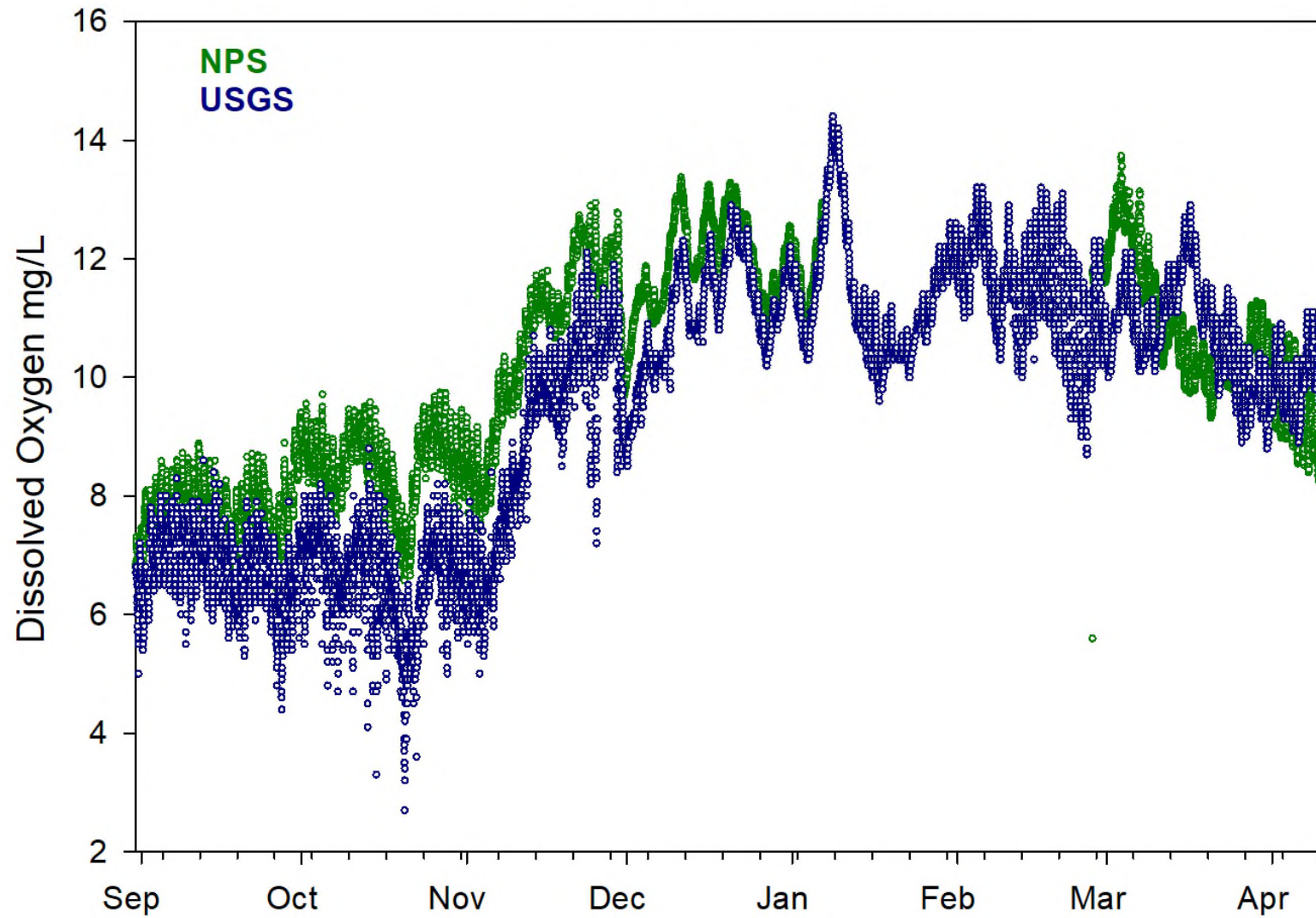


222 days later

April 10, 2017



Obed Wild and Scenic River



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Cumberland Island National Seashore



September 8, 2016

Cumberland Island National Seashore



189 days later

March 16, 2017

Cumberland Island National Seashore

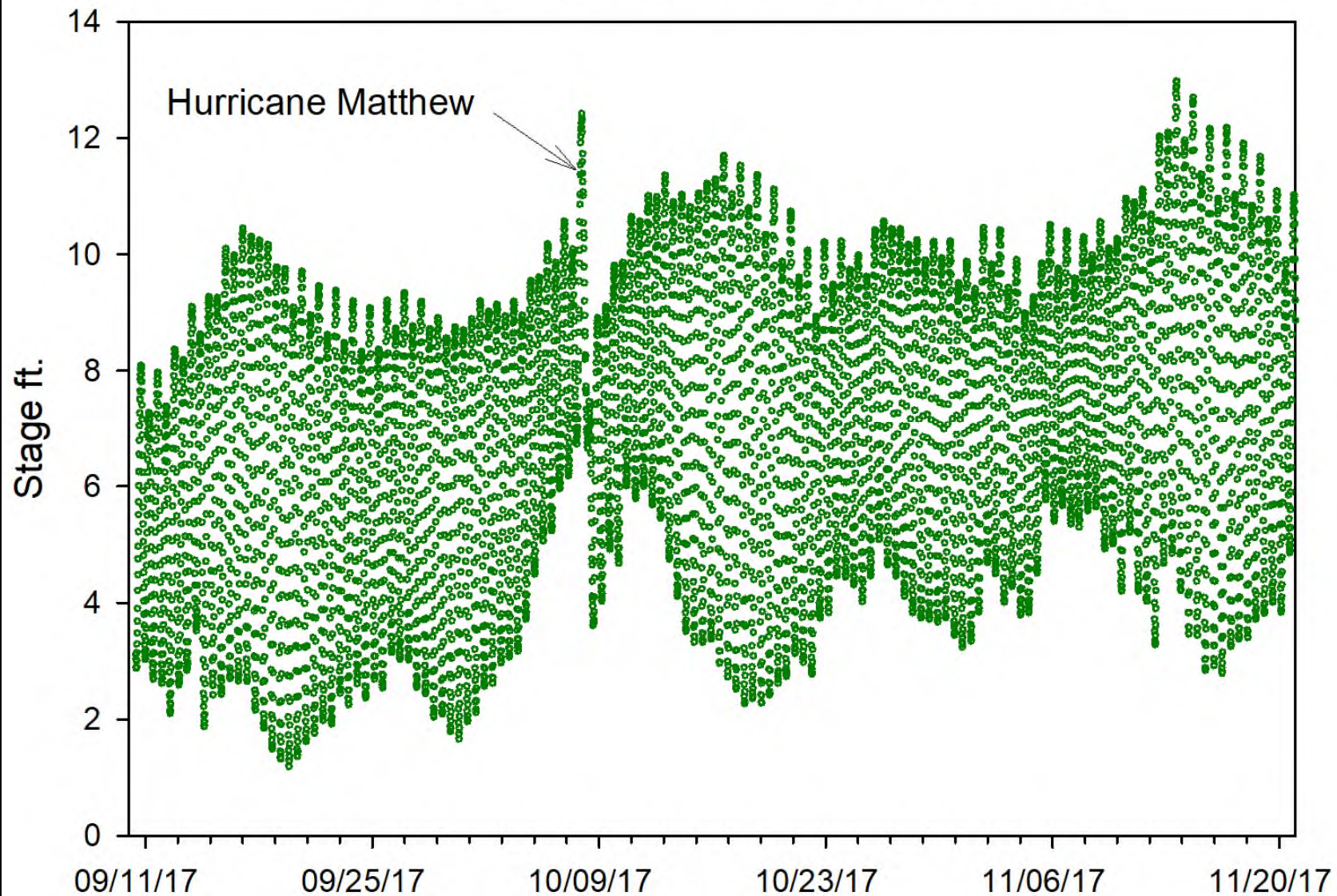


189 days later



March 16, 2017

Cumberland Island National Seashore



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Puget Sound



December 8, 2016

Puget Sound



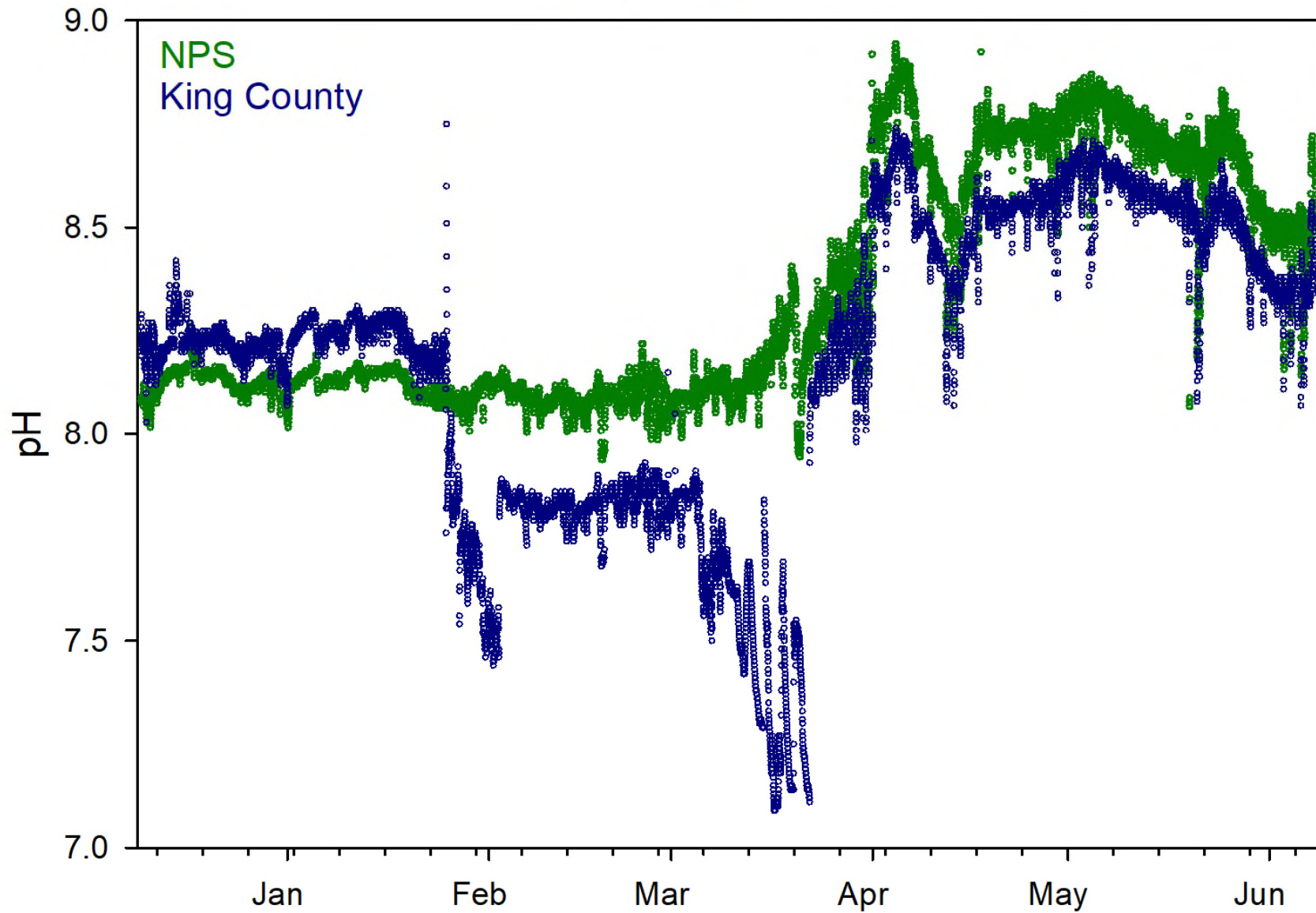
182 days later
June 8, 2017

Puget Sound



182 days later
June 8, 2017

Puget Sound



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